

General

Guideline Title

American Academy of Orthopaedic Surgeons appropriate use criteria for the treatment of distal radius fractures.

Bibliographic Source(s)

American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons appropriate use criteria for the treatment of distal radius fractures. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2013 Mar. 70 p. [48 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

General Assumptions

The following assumptions clarified the interpretation of the clinical scenarios presented in the Treatment of Distal Radius Fractures Appropriate Use Criteria. This standardization ensures that those responsible for rating the appropriateness of a scenario and those reading these scenarios are using the same parameters to address the scenario.

Before these Appropriate Use Criteria (AUC) are consulted, it is assumed that:

1. The patient is healthy enough to undergo surgery if indicated.
2. An adequate physical exam of the patient has been conducted.
3. Adequate radiographs have been obtained and examined by the clinician.
4. The patient history is available and has been reviewed by the clinician.
5. The patient has given adequate and informed consent.
6. The surgeon is trained and capable of performing all operative techniques with equal effectiveness.
7. The fracture is not so complex, and/or the patient's comorbidities or social situation such a factor, as to represent an exception to these scenarios (e.g., C3.3 fracture that might be optimally treated with a distraction plate).
8. There is not a clear advantage (i.e., evidence for or against) for one procedure based on fracture pattern (e.g., volar plate for volar shearing fracture).
9. The surgery, when indicated, will be performed in a timely fashion to allow ideal treatment of the fracture.
10. The surgeon will perform the surgery in the most appropriate location (i.e., ambulatory surgical center [ASC], outpatient, inpatient) based on the health of the patient and other injuries rather the nature of the fracture. Open fractures and associated injuries may dictate that surgery should be inpatient.

11. The surgeon will choose a cost-effective treatment based on the nature of the fracture and expectations after surgery.
12. The facility has each type of implant/equipment available and capable support personnel.
13. In the event that the patient has an open wound, it is assumed that the clinician has cleaned the wound before considering treatment.
14. It is assumed that a low-energy open fracture is a Grade I or II open fracture.

Results of Appropriateness Ratings

The appropriate use criteria tables (see pp. 18-23 of the original guideline document) contain the final appropriateness ratings assigned by the nine members of the voting panel. The appropriate use criteria tables are formatted by AO (Arbeitsgemeinschaft für Osteosynthesefragen [Association for the Study of Internal Fixation]) fracture type (i.e., A, B, or C) and mechanism of injury (i.e., high mechanism of injury versus low mechanism of injury). Additional patient characteristics are found under the column titled "Patient Characteristics". The appropriate use criteria for each patient scenario can be found under each of the 10 treatment columns. These criteria are formatted by appropriateness labels (i.e., "R"=Rarely Appropriate, "M"=May Be Appropriate, and "A"=Appropriate), median score (in parentheses), and + or - indicating agreement or disagreement, respectively.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Distal radius fractures

Guideline Category

Management

Treatment

Clinical Specialty

Orthopedic Surgery

Intended Users

Physicians

Guideline Objective(s)

- To determine appropriateness of treatment for distal radius fractures in order to improve patient care and obtain the best outcomes while considering the subtleties and distinctions necessary in making clinical decisions
- To help determine the appropriateness of clinical practice guideline recommendations for the heterogeneous patient population routinely seen in practice

Target Population

Adult patients (defined as patients 19 years of age and older) with acute distal radius fracture

Interventions and Practices Considered

1. Immobilization without reduction
2. Reduction and immobilization
3. Percutaneous pinning
4. Spanning external fixation
5. Non-spanning external fixation
6. Distraction plate
7. Volar locking plate
8. Dorsal plate
9. Fragment specific fixation
10. Intramedullary nail

Major Outcomes Considered

- Pain relief
- Functional status
- Complications of surgical treatments
- Mental and physical health

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Concurrent with the Writing Panel developing the criteria, the American Academy of Orthopaedic Surgeons (AAOS) Appropriate Use Criteria (AUC) Unit undertook a literature review based on the results of the AAOS clinical practice guideline and all literature published after the release of the clinical practice guideline related to the treatment of distal radius fractures. This literature review informed the decisions relevant to the indications identified by the Writing Panel when they were available and necessary. The literature review also considered lower quality evidence when the best available evidence (i.e., randomized control trials) did not contain information relevant to the clinical scenarios. The full results of the literature review appear in the Literature Review Findings section of the original guideline document.

PubMed, EMBASE, CINAHL, and the Cochrane Central Register of Controlled Trials databases were searched. The literature search for the AUC was an update of the 2009 "Treatment of Distal Radius Fractures" clinical practice guideline literature search and was conducted from June of 2011 to February of 2012. The updated search covered articles published from January 1966 to February 1, 2012.

All articles were appraised for study quality and applicability. Those studies with extremely poor designs, as defined by the AAOS's appraisal method, were not included in the literature review.

Number of Source Documents

- Fused epiphysis — Five Level II randomized controlled trials met the inclusion criteria.
- Post reduction radial shortening >3mm and dorsal tilt of >10° — Five Level II randomized clinical trials are included.
- Surgical treatment of distal radius fractures — Fourteen Level II clinical trials are included.
- C1, C2, C3 arthroscopic evaluation in patients with other associated injuries — One Level II study is included.
- Concurrent treatment of distal radioulnar joint instability in patients with operatively treated distal radius fracture — One Level II prospective randomized controlled trial study and one Level III prospective randomized controlled trial study met the inclusion criteria.
- Fixation of ulnar styloid fractures associated with distal radius fractures — One Level II randomized controlled trial study and one single

prospective non-randomized study met the inclusion criteria.

- Age >55 years — Three Level II clinical trials met the inclusion criteria.
- Early wrist immobilization — Three Level II clinical trials met the inclusion criteria.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence for Primary Research Question¹

Types of Studies				
	Therapeutic Studies Investigating the results of treatment	Prognostic Studies Investigating the effects of a patient characteristic on the outcome of disease	Diagnostic Studies Investigating a diagnostic test	Economic and Decision Analyses Developing an economic or decision model
Level I	<ul style="list-style-type: none"> • High quality randomized trial with statistically significant difference or no statistically significant difference but narrow confidence intervals • Systematic review² of Level I randomized controlled trials (RCTs) (and study results were homogenous³) 	<ul style="list-style-type: none"> • High quality prospective study⁴ (all patients were enrolled at the same point in their disease with ≥80% follow-up of enrolled patients) • Systematic review² of Level I studies 	<ul style="list-style-type: none"> • Testing of previously developed diagnostic criteria on consecutive patients (with universally applied reference "gold" standard) • Systematic review² of Level I studies 	<ul style="list-style-type: none"> • Sensible costs and alternatives; values obtained from many studies; with multiway sensitivity analyses • Systematic review² of Level I studies
Level II	<ul style="list-style-type: none"> • Lesser quality RCT (e.g., <80% follow-up, no blinding, or improper randomization) • Prospective⁴ comparative study⁵ • Systematic review² of Level II studies or Level I studies with inconsistent results 	<ul style="list-style-type: none"> • Retrospective study⁶ • Untreated controls from an RCT • Lesser quality prospective study (e.g., patients enrolled at different points in their disease or <80% follow-up) • Systematic review² of Level II studies 	<ul style="list-style-type: none"> • Development of diagnostic criteria on consecutive patients (with universally applied reference "gold" standard) • Systematic review² of Level II studies 	<ul style="list-style-type: none"> • Sensible costs and alternatives; values obtained from limited studies; with multiway sensitivity analyses • Systematic review² of Level II studies
Level III	<ul style="list-style-type: none"> • Case control study⁷ • Retrospective⁶ comparative study⁵ • Systematic review² of Level III studies 	<ul style="list-style-type: none"> • Case control study⁷ 	<ul style="list-style-type: none"> • Study of nonconsecutive patients; without consistently applied reference "gold" standard • Systematic review² of Level III studies 	<ul style="list-style-type: none"> • Analyses based on limited alternatives and costs; and poor estimates • Systematic review² of Level III studies
Level IV	<ul style="list-style-type: none"> • Case series⁸ 	<ul style="list-style-type: none"> • Case series 	<ul style="list-style-type: none"> • Case-control study • Poor reference standard 	<ul style="list-style-type: none"> • Analyses with no sensitivity analyses
Level V	Expert opinion	Expert opinion	Expert opinion	Expert opinion

- ¹ A complete assessment of quality of individual studies requires critical appraisal of all aspects of the study design.
- ² A combination of results from two or more prior studies.
- ³ Studies provided consistent results.
- ⁴ Study was started before the first patient enrolled.
- ⁵ Patients treated one way (e.g., cemented hip arthroplasty) compared with a group of patients treated in another way (e.g., uncemented hip arthroplasty) at the same institution.
- ⁶ The study was started after the first patient enrolled.
- ⁷ Patients identified for the study based on their outcome, called "cases"; e.g., failed total hip arthroplasty, are compared to those who did not have outcome, called "controls"; e.g., successful total hip arthroplasty.
- ⁸ Patients treated one way with no comparison group of patients treated in another way.

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The American Academy of Orthopaedic Surgeons (AAOS) includes only the best available evidence relevant to the treatments and patient indications addressed within the scope of the Appropriate Use Criteria (AUC). Accordingly, AAOS first included the highest quality evidence for any given outcome if it was available. The quality of evidence was rated using an evidence hierarchy for each of four different study types: therapeutic, prognostic, diagnostic, and economic or decision-modeling. The voting panel members review the evidence tables and supporting literature for each clinical scenario during their rounds of rating.

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Expert Consensus (Nominal Group Technique)

Description of Methods Used to Formulate the Recommendations

Developing Criteria

Members of the Treatment of Distal Radius Fractures Appropriate Use Criteria (AUC) Writing Panel, who are orthopaedic specialists in treatment of distal radius fractures, developed clinical scenarios using the following guidelines:

- Include a broad spectrum of patients that may be eligible for treatment of distal radius fractures (*comprehensive*)
- Classify patients into a unique scenario (*mutually exclusive*)
- Consistently classify similar patients into the same scenario (*reliable, valid indicators*)

The Writing Panel developed the scenarios by categorizing patients in terms of indications evident during the clinical decision making process (see Figure 1 in the original guideline document). These scenarios relied upon definitions and general assumptions, mutually agreed upon by the Writing Panel during the development of the scenarios. These definitions and assumptions were necessary to provide consistency in the interpretation of the clinical scenarios among experts voting on the scenarios and readers using the final criteria.

Formulating Indications and Scenarios

The scenarios began development with the Treatment of Distal Radius Fractures AUC Writing Panel identifying clinical indications typical of patients commonly presenting for treatment of distal radius fractures in clinical practice. Indications are most often parameters observable by the clinician, including symptoms or results of diagnostic tests. Additionally "human factor" (e.g., activity level) or demographic variables can be considered.

Indications identified in clinical trials (derived from patient selection criteria) included in the American Academy of Orthopaedic Surgeons (AAOS) Clinical Practice Guidelines served as a starting point for the Treatment of Distal Radius Fractures AUC Writing Panel and ensured that these Appropriate Use Criteria referred to the evidence base for the Treatment of Distal Radius Fractures AUC. The Writing Panel considered this initial list and other indications based on their clinical expertise and selected the most clinically relevant indications. The Writing Panel then defined distinct classes for each indication in order to stratify/categorize the indication (see Table 1 in the original guideline document).

The Writing Panel organized these indications into a matrix of clinical scenarios (see Appendix B in the original guideline document) that addressed all combinations of the classifications. The Writing Panel was given the opportunity to remove any scenarios that never occur in clinical practice; however, they agreed that all 240 scenarios could present themselves in clinical practice, thus no scenarios were removed. The major clinical decision making indications chosen by the Writing Panel divided the matrix of clinical scenarios into chapters. AO (Arbeitsgemeinschaft für Osteosynthesefragen [Association for the Study of Internal Fixation]) fracture type, mechanism of injury, functional demands, American Society of Anesthesiologists (ASA) status, and associated injuries served as the major clinical decision making indications for the chapters presented in Table 1 of the original guideline document.

Creating Definitions and Assumptions

The Treatment of Distal Radius Fractures AUC Writing Panel constructed concise and explicit definitions for the indications and classifications. This standardization helped ensure that how the Writing Panel defined AO fracture types, mechanisms of injury, functional demands, ASA statuses, and associated injuries was consistent among those reading the clinical scenario matrix or the final criteria. Definitions drew explicit boundaries when possible and were based on standard medical practice or existing literature.

Additionally, the Writing Panel formulated a list of general assumptions in order to provide more consistent interpretations of a scenario. These assumptions differed from definitions in that they identified circumstances that exist outside of the control of the clinical decision making process. The main goal of assumptions was to focus scenarios so that they apply to the average patient presenting to an average physician at an average facility.

The definitions and assumptions provided all readers with a common starting point in interpreting the clinical scenarios. This list of definitions and assumptions accompanied the matrix of clinical scenarios in all stages of the development of this AUC and appears in the Definitions and Assumptions section of the original guideline document (see also the "Major Recommendations" field).

Voting Panel Modifications to Writing Panel Materials

The original indications table constructed by the Writing Panel was modified by the Voting Panel during the round two discussions. See the "Methodology" section in the original guideline document for additional details of Voting Panel modifications.

Literature Review

Concurrent with the Writing Panel developing the criteria, the AAOS Appropriate Use Criteria Unit undertook a literature review based on the results of the AAOS clinical practice guideline and all literature published after the release of the clinical practice guideline related to the treatment of distal radius fractures. This literature review informed the decisions relevant to the indications identified by the Writing Panel when they were available and necessary. The literature review also considered lower quality evidence when the best available evidence (i.e., randomized control trials) did not contain information relevant to the clinical scenarios. The full results of the literature review appear in the "Literature Review Findings" section of the original guideline document.

Reviewing Scenarios

After the Writing Panel developed the scenarios, the Treatment of Distal Radius Fractures AUC Review Panel reviewed the proposed chapters in order to ensure that they were representative of patients and scenarios clinicians are likely to encounter. The Review Panel was comprised of orthopaedic surgeons who routinely perform treatments for distal radius fractures and other specialties who may refer patients with distal radius fractures to a specialist. No member of this panel participated in the Writing Panel's initial development of the scenarios or participated in the appropriateness rating of the scenarios.

Review Panel members considered the lists of scenarios, definitions, assumptions and the literature review associated with each scenario. Each independent reviewer suggested to the Writing Panel, potential modifications to the content or structure of the lists and literature review. The Writing Panel provided final determination of modifications to the indications, scenarios, assumptions and literature review.

Determining Appropriateness

Treatment of Distal Radius Fractures AUC Voting Panel

A multidisciplinary panel of clinicians assembled to determine the appropriateness of treatments for distal radius fractures. This group consisted of approximately 50% specialists and 50% generalists. Two non-voting moderators who are orthopaedic surgeons but are not specialists in treatment of distal radius fractures facilitated the Voting Panel. The moderators were familiar with the methods and procedures of AAOS Appropriate Use Criteria and led the panel (as non-voters) in discussions. Additionally, no member of the voting panel was involved in the development (Writing Panel) or independent review (Review Panel) of the scenarios.

The Voting Panel used a modified Delphi procedure to determine appropriateness ratings. The Voting Panel participated in two rounds of voting while considering evidence-based information provided in the literature review. While cost is often a relevant consideration, panelists focused their appropriateness ratings on the effectiveness of treatment for distal radius fractures.

Rating Appropriateness

When rating the appropriateness of a scenario, the Voting Panel considered the following definition:

"An appropriate treatment for distal radius fractures is one for which the treatment is generally acceptable, is a reasonable approach for the indication, and is likely to improve the patient's health outcomes or survival."

They then rated each scenario using their best clinical judgment, taking into consideration the available evidence, for an average patient presenting to an average physician at an average facility as follows:

Table. Appropriateness Ratings

Rating	Explanation
7-9	Appropriate: Appropriate for the indication provided, meaning treatment is generally acceptable and is a reasonable approach for the indication and is likely to improve the patient's health outcomes or survival.
4-6	May Be Appropriate: Uncertain for the indication provided, meaning treatment may be acceptable and may be a reasonable approach for the indication, but with uncertainty implying that more research and/or patient information is needed to further classify the indication.
1-3	Rarely Appropriate: Rarely an appropriate option for management of patients in this population due to the lack of a clear benefit/risk advantage; rarely an effective option for individual care plans; exceptions should have documentation of the clinical reasons for proceeding with this care option (i.e., procedure is not generally acceptable and is not generally reasonable for the indication).

Each panelist uses the scale below to record their response for each scenario:

Appropriateness of [Topic]

- Rarely Appropriate: 1, 2, 3
- May Be Appropriate: 4, 5, 6
- Appropriate: 7, 8, 9

Round One Voting

The first round of voting occurred after completion of the independent review of the scenarios by the Review Panel and approval of the final indications, scenarios, and assumptions by the Writing Panel. The Voting Panel rated the scenarios electronically using a personalized ballot created by AAOS staff using SNAP 10 Survey Software. There was no interaction between panel members while completing the first round of voting. Panelists considered the following materials:

- The instructions for rating appropriateness
- The completed literature review, that is appropriately referenced when evidence is available for a scenario
- The list of indications, definitions and assumptions, to ensure consistency in the interpretation of the clinical scenarios

Round Two Voting

The second round of voting occurred after a series of 3 conference calls, which were led by a non-voting moderator. Before the discussions, each panelist received a personalized document that included their first round ratings along with summarized results of the first-round ratings that resulted in disagreement. These results indicated the frequency of ratings for a scenario for all panelists. The document contained no identifying information for other panelists' ratings. The moderator also used a document that summarized the results of the panelists first round voting. These personalized documents served as the basis for discussions of scenarios which resulted in disagreement.

After all of the disagreed upon scenarios were discussed, the Voting Panel performed a second round of voting for only those scenarios. After the round two ratings were submitted, AAOS staff calculated the median values and level of agreement for all voting items, after which the Voting Panel examined the ratings for anomalies. There was no attempt to obtain consensus among the panel members.

Final Ratings

Using the median value of the second round ratings, AAOS determined the final levels of appropriateness. Disagreement among raters can affect the final rating. Agreement and disagreement were determined using the BIOMED definitions of Agreement and Disagreement as reported in the Research and Development/University of California, Los Angeles (RAND/UCLA) Appropriate Method User's Manual for a panel of 8 to 10 voting members (see Table 3 in the original guideline document). For this panel size, disagreement is defined as when ≥ 3 member's appropriateness ratings fell within the appropriate (7-9) and rarely appropriate (1-3) ranges for any scenario (i.e., ≥ 3 member's ratings fell between 1-3 and ≥ 3 member's ratings fell between 7-9 on any given scenario and its treatment). If there is still disagreement in the Voting Panel ratings after the second round of voting, that voting item is labeled as "5" regardless of median score. Agreement is defined as ≤ 2 panelists rated outside of the 3-point range containing the median.

See Tables 3 and 4 in the original guideline documents for more information on final ratings.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

American Academy of Orthopaedic Surgeons (AAOS) Appropriate Use Criteria (AUC) Section, the AAOS Council on Research and Quality, and the AAOS Board of Directors sequentially approved the Appropriate Use Criteria for Treatment of Distal Radius Fractures.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is not specifically stated for each recommendation.

The appropriate use criteria (AUC) are based on the best available scientific evidence in conjunction with the clinical expertise of physicians from multiple medical specialties.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate treatment of patients with a distal radius fracture to enable pain relief and maintenance of the patient's functional status

Potential Harms

Most treatments are associated with some known risks, especially invasive and operative treatments. Therefore, discussion of available treatments and procedures applicable to the individual patient rely on mutual communication between the patient and physician, weighing the potential risks

and benefits for that patient.

Some of the more common risks associated with surgical treatments include:

- Carpal tunnel syndrome
- Thumb or shoulder pain
- Ulnar, median, and radial nerve symptoms
- Malunion
- Tendon rupture
- Infection

Contraindications

Contraindications

Contraindications vary widely based on the treatment administered. Therefore, discussion of available treatments and procedures applicable to the individual patient rely on mutual communication between the patient and physician, weighing the potential risks and benefits for that patient.

Qualifying Statements

Qualifying Statements

- Volunteer physicians from multiple medical specialties created and categorized these Appropriate Use Criteria. These Appropriate Use Criteria are not intended to be comprehensive or a fixed protocol, as some patients may require more or less treatment or different means of diagnosis. These Appropriate Use Criteria represent patients and situations that clinicians treating or diagnosing musculoskeletal conditions are most likely to encounter. The clinician's independent medical judgment, given the individual patient's clinical circumstances, should always determine patient care and treatment.
- These criteria should not be construed as including all indications or excluding indications reasonably directed to obtaining the same results. The criteria intend to address the most common clinical scenarios facing all appropriately trained surgeons and all qualified physicians managing patients under consideration for treatment of distal radius fractures. The ultimate judgment regarding any specific criteria should address all circumstances presented by the patient and the needs and resources particular to the locality or institution. It is also important to state that these criteria were developed as guidelines and are not meant to supersede clinician expertise and experience or patient preference.
- Some drugs or medical devices referenced or described in this document may not have been cleared by the U.S. Food and Drug Administration (FDA) or may have been cleared for a specific use only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or device he or she wishes to use in clinical practice.

Implementation of the Guideline

Description of Implementation Strategy

Disseminating Appropriate Use Criteria

Publication of the Appropriate Use Criteria (AUC) document is on the American Academy of Orthopaedic Surgeons (AAOS) Web site at <http://www.aaos.org/auc> [REDACTED]. This document provides interested readers with full documentation about the development of Appropriate Use Criteria and further details of the criteria ratings.

AUCs are first announced by an Academy press release and then published on the AAOS Web site. AUC summaries are published in the AAOS *Now* and the *Journal of the American Academy of Orthopaedic Surgeons* (JAAOS). In addition, the Academy's Annual Meeting showcases the AUCs on Academy Row and at Scientific Exhibits.

The dissemination efforts of AUC include web-based mobile applications, webinars, online modules for the Orthopaedic Knowledge Online Web site, Radio Media Tours, and Media Briefings. In addition AUCs are also promoted in relevant Continuing Medical Education (CME) courses and distributed at the AAOS Resource Center.

Other dissemination efforts outside of the AAOS include submitting AUCs to the National Guideline Clearinghouse and to other medical specialty societies' meetings.

Implementation Tools

Mobile Device Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons appropriate use criteria for the treatment of distal radius fractures. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2013 Mar. 70 p. [48 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 Mar

Guideline Developer(s)

American Academy of Orthopaedic Surgeons - Medical Specialty Society

Source(s) of Funding

The American Academy of Orthopaedic Surgeons exclusively funded development of these Appropriate Use Criteria. The American Academy of

Orthopaedic Surgeons received no funding from outside commercial sources to support the development of these Appropriate Use Criteria.

Guideline Committee

Treatment of Distal Radius Fractures Appropriate Use Criteria (AUC) Writing Panel

Composition of Group That Authored the Guideline

Writing Panel Members: Julie E. Adams, MD, MS, American Academy of Orthopaedic Surgeons; Brett D. Crist, MD, FAAOS, FACS, Orthopaedic Trauma Association; Charles A. Goldfarb, MD, American Society of Surgery of the Hand; John J. McGraw, MD, American Academy of Orthopaedic Surgeons; Miguel Pirela-Cruz, MD, FACS, American Association for Hand Surgery; David C. Ring, MD, PhD, American Society for Surgery of the Hand; Jaiyoung Ryu, MD, American Association for Hand Surgery; Paul Tornetta, III, MD, Orthopaedic Trauma Association

Review Panel Members: Jeffrey E. Budoff, MD, American Society for Surgery of the Hand; Peter J. Evans, MD, PhD, American Society for Surgery of the Hand, American Association for Hand Surgery, American Association of Hip and Knee Surgeons; Daren Forward, MD, FRCS, American Society for Surgery of the Hand; Jeffrey B. Friedrich, MD, FACS, American Society of Plastic Surgeons; M. Felix Freshwater, MD, American College of Occupational and Environmental Medicine; Kenneth Koval, MD, American Society for Surgery of the Hand; Donald H. Lee, MD, American Society for Surgery of the Hand; Jose J. Monsivais, MD, FACS, American Society for Surgery of the Hand; Jay Pomerance, MD, American Society for Surgery of the Hand; J. Andrew Trenholm, MD, FRCSC, American Society for Surgery of the Hand, Orthopaedic Trauma Association; Boris A. Zelle, MD, Orthopaedic Trauma Association, American Academy of Orthopaedic Surgeons; Dan A. Zlotolow, MD, American Society for Surgery of the Hand

Voting Panel Members: Alan M. Adelman, MD, MS, American Academy of Family Physicians; Henry Backe, MD, American Association of Hip and Knee Surgeons; George W. Balfour, MD, American Academy of Orthopaedic Surgeons; Warren C. Hammert, MD, American Society for Surgery of the Hand; Robert Charles Kramer, MD, American Academy of Orthopaedic Surgeons; David "Dirk" Leu, MD, Pediatric Orthopaedic Society of North America; Peter Stern, MD, American Society for Surgery of the Hand; Steven Strode, MD, MPH, Med, American Academy of Family Physicians; Walter H. Truong, MD, Pediatric Orthopaedic Society of North America

Voting Panel Round Two Discussion Moderators: William C. Watters, III, MD; James O. Sanders, MD

Appropriate Use Criteria (AUC) Section Leader: William C. Watters, III, MD

American Academy of Orthopaedic Surgeons (AAOS) AUC Section: Joseph A. Bosco, III, MD; Brent Graham, MD; Michael H. Heggeness, MD; Michael Warren Keith, MD; Charles T. Mehlman, DO, MPH

Committee on Evidence-Based Quality and Value Chair: David S. Jevsevar, MD, MBA

Council on Research and Quality Chair: Kevin J. Bozic, MD, MBA

AAOS Staff: Deborah Cummins, PhD, Director of Research and Scientific Affairs; Jayson Murray, MA, Manager, Appropriate Use Criteria Unit; William Martin, III, MD, Medical Director; Nilay Patel, MA, Lead Research Analyst; Anne Woznica, MLS, Medical Librarian; Leeaht Gross, MPH, Liaison to AUC Section; Yasseline Martinez, CPG/AUC Administrative Assistant

Financial Disclosures/Conflicts of Interest

In accordance with American Academy of Orthopaedic Surgeons policy, all individuals whose names appear as authors or contributors to this document filed a disclosure statement as part of the submission process. All authors provided full disclosure of potential conflicts of interest prior to participation in the development of these Appropriate Use Criteria. Disclosure information for all panel members can be found in Appendix C of the original guideline document.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [American Academy of Orthopaedic Surgeons \(AAOS\) Web site](#) .

Print copies: Available from the American Academy of Orthopaedic Surgeons, 6300 North River Road, Rosemont, IL 60018-4262. Telephone: (800) 626-6726 (800 346-AAOS); Fax: (847) 823-8125; Web site: www.aaos.org .

Availability of Companion Documents

A mobile app for treatment of distal radius fractures is available from the [American Academy of Orthopaedic Surgeons Web site](#) .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on July 31, 2013. The information was verified by the guideline developer on August 31, 2013.

Copyright Statement

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions. For more information, please contact AAOS Department of Research and Scientific Affairs, 6300 North River Road, Rosemont, IL 60018; Phone: (847) 823-7186; Fax: (847) 823-8125.

Disclaimer

NGC Disclaimer

The National Guideline Clearinghouse^{â„¢} (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the [NGC Inclusion Criteria](#).

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.